



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,966	09/30/2003	Frederick M. Discenzo	01AB175C/ALBRP246USC	4946
<div>7590 Susan M. Donahue Rockwell Automation, 704-P, IP Department 1201 South 2nd Street Milwaukee, WI 53204</div>			<div>EXAMINER CABRERA, ZOILA E</div>	
			<div>ART UNIT 2123</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 02/21/2008</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/674,966

Applicant(s)

DISCENZO ET AL.

Examiner

Zoila E. Cabrera

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 8, 2007 has been entered.

2. Claims 1-47 are remained for consideration.

Response to Arguments

3. Applicant's arguments filed October 8, 2007 have been fully considered but they are not persuasive.

Applicant argues on Pages 10-11,

It is the result of the claims as applied in a practical application that is germane to the determination of whether the claims are directed towards statutory subject matter, not whether the underlying means by which the result is effectuated that should be tangible, as intimated in the Final Office Action.

Examiner disagrees because as pointed out in the final rejection, the claim is directed to a thought, a computation or manipulated data that may be interpreted to be abstract in nature. Please note that all the computations are for "*facilitating*" modification and control of the machines. This step does not provide for a positive action of modifying and controlling the machines, it only facilitates.

Applicant argues on Page 12,

In the Abstract *inter alia*, Bryant et al. states that the model may have parameters, associated with features and/or faults of the system, that are used in diagnosing the state of the system, and that "selectively repeated diagnosis over time may yield a prognosis' of the system." Paragraph [0122] adds that "a prognosis may predict the failure of a part." It is clear that Bryant et al. can only be used to model the current state of a part in a system and observe a trend, which is very different from the claimed invention in which probabilistic and statistical techniques are used to infer a prognosis of the future state of an entire machine. It is therefore readily apparent that Bryant et al. fails to disclose or suggest anything concerning regulating operation of a business component based at least upon prognostic data derived by a classifier performing a probabilistic analysis for future state of at least a subset of the operations concerning a machine. Therefore, Bryant et al. fails to disclose "every aspect of the claimed invention" and for at least these reasons, the rejection of claim 38 should be withdrawn.

Examiner disagrees because Bryant discloses, as applicant admitted, "a prognosis may predict the failure of a part" ([0122]). Bryant further discloses a probabilistic analysis ([0092]-[0093], please note that it has to be derived by a classifier in order to detect the type of a fault of a machine part).

Applicant further argues on Page 14,

Gotou et al. provides for only determining and diagnosing any abnormality associated with any machine component and nowhere teaches or suggests a plurality of intelligent software agents' that serve as proxies for at least the subset of machines, for modeling and representing interactions with one another, and for facilitating convergence on modification and control of the subset of machines, for efficiently optimizing industrial business operations.

Examiner disagrees because Gotou discloses a plurality of intelligent software agents that serve as proxies for at least the subset of machines, for modeling and representing interactions with one another, and for facilitating convergence on

modification and control of the subset of machines, for efficiently optimizing industrial business operations (Page 2 [0013]; Page 5, [0051]-[0052]; Fig. 26-27, i.e., intelligent software reads on the diagnosis module). Gotou clearly discloses monitoring machine components and determining an abnormality of such components of a machine. Bryant clearly discloses a model-based machine diagnostics and prognostics (Abstract). Therefore, a prognosis of components of a machine using intelligent software are taught by Gotou and Bryant.

Applicant argues on Page 15,

Gotou et al. provides for only a database that contains specifications of each machine component and examples of diagnosis' and the database helps in diagnosing a machine component accurately and fails to teach or suggest the prognostic engine comprises a classifier and the classifier performs a probabilistic analysis in connection with the inference. The secondary reference also, Bryant et al., only performs repeated diagnosis' to yield a prognosis of the system (abstract and paragraph [0003]) and nowhere suggests or teaches that the prognosis engine comprises a classifier and the classifier performs a probabilistic analysis in connection with the inference.

Examiner disagrees because Bryant discloses a model based machine diagnostics and prognostics system wherein "a prognosis may predict the failure of a part" ([0122]). Bryant further discloses a probabilistic analysis ([0092]-[0093], please note that it has to be derived by a classifier in order to detect the type of a fault of a machine part).

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Art Unit: 2123

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-47 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claimed subject matter lacks a practical application of a judicial exception (law of nature, abstract idea, naturally occurring phenomenon) since it fails to produce a useful, concrete and tangible result. Specifically, the claimed subject matter does not produce a tangible result because the claimed subject matter fails to produce a result that is limited to having a real world value rather than a result that may be interpreted to be abstract in nature, as, for example, a thought, a computation or manipulated data. More specifically, the claimed subject matter provides for "a component that received data and a prognostics engine that infers states for modeling and for *facilitating* modification"; "a data field comprising information that regulates operation of a business", "analyzing and specifying" steps. These produced "results" remain in the abstract and thus, fails to achieve the required status of having a real world value since it does not "generate" any output data or store values of output data for a practical use in a real world application.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

Art Unit: 2123

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 38 is rejected under 35 U.S.C. 102(e) as being anticipated by Bryant et al.

(US 2004/0236450 A1).

As for claim 38, Bryant discloses:

38. A data packet adapted to be transmitted between at least two computer processes, comprising: a data field comprising information relating to regulating operation of a business component based at least upon diagnostic data derived by a classifier performing a probabilistic analysis for future state of at least a subset of the operations concerning a machine (Fig. 1; [0114]-[0122]; Abstract; [0125]-[0132]; [0092]; [0093]; [0107]).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-37, 39-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gotou et al. (US 2002/0013635 A1) in view of Bryant et al. (US 2004/0236450 A1).

Regarding claims 1-37, 39-47, Gotou discloses:

1. A system that facilitates optimizing industrial business operations, comprising: a component that receives data relating to state(s) of a subset of machines that are part of the industrial business operations Page 1, [0011]-[0012]); and a diagnostic engine diagnose at least a subset of the operations based in part on the received data, the diagnostic engine comprising a plurality of intelligent software agents that serve as proxies for at least the subset of machines, for modeling and representing interactions with one another, and for facilitating convergence on modification and control of the subset of machines, for efficiently optimizing industrial business operations (Page 2 [0013]; Page 5, [0051]-[0052]).

2. The system of claim 1, further comprising a host computer that executes the diagnostic engine (Fig. 1, element 17).

3. The system of claim 1, the diagnostic engine comprising a classifier (Page 6 [0060]-[0061]; Page 20, [0239]).

4. The system of claim 1, at least a subset of the machines comprising diagnostic components that collaborate in a distributed manner (Page 3, [0029]-[0030]).

5. The system of claim 1, at least one of the diagnostics components performs diagnosis for a cluster of machines (Page 1, [0011]-[0012]).

Art Unit: 2123

6. The system of claim 1, the diagnosis engine and the diagnostic components collaborating to improve operating rate of at least a subset of the machines (Page 2, [0013]).
7. The system of claim 3, the classifier performs a probabilistic analysis in connection with the inference ([02030]).
8. The system of claim 1, at least a subset of the machines and/or components are represented by intelligent agents (Fig. 10, element 4).
9. The system of claim 1, at least a subset of the machines and/or components are physically located remote from one another (Fig. 21).
10. A method that facilitates asset optimization in an industrial automation environment, comprising: receiving and analyzing in real-time data relating to diagnoses of operational aspects of a subset of machines that are part of the industrial automation system; modeling and representing interactions of the subset of machines for facilitating convergence on modification and control of the subset of machines; (Figs. 26-27, element 114); and modifying asset utilization in the industrial automation system based at least in part as a function of the analyzed diagnostic machine data (Page 6 [0064]).
11. The method of claim 10 further comprising: selecting a desired operating point

within an allowable range of operation about a system setpoint according to performance characteristics associated with at least one of the machines; and controlling at least one machine according to the desired operating point (Pag. 2, [0020]).

12. The method of claim 10, further comprising employing an options based analysis in connection with asset management (Page 3, [0029]-[0032]).

13. The method of claim 11, further comprising obtaining the system setpoint and the allowable range of operation from a user (Page 2, [0020]).

14. The method of claim 11, wherein selecting the desired operating point comprises: correlating at least two of motor efficiency information, pump efficiency information, and motor drive efficiency information in order to derive correlated system efficiency information (Page 18, [0208]); and selecting the desired operating point as the optimum efficiency point within the allowable range of operation according to the correlated system efficiency information (page 2, [0020]).

15. The method of claim 14, wherein controlling the system according to the desired operating point comprises providing a motor speed signal to the motor drive according to the desired operating point (Page 1, [0002]).

Art Unit: 2123

16. The method of claim 14, further comprising obtaining at least one of the efficiency information, the allowable range, and the system setpoint from a user (Page 2, [0020]).

17. The method of claim 14, further comprising obtaining at least one of the efficiency information, the allowable range, and the system setpoint from a host computer (page 2, [0020]).

18. The method of claim 17, wherein the at least one of the efficiency information, the allowable range, and the system setpoint is obtained via a network (Page 2, [0020]); Fig. 28).

19. The method of claim 18, wherein the at least one of the efficiency information, the allowable range, and the system setpoint is obtained via wireless communications (Page 2, [0020]); Fig. 28).

20. The method of claim 14, further comprising obtaining at least a portion of one of the efficiency information, the allowable range, and the system setpoint from prior operation of the system (Page 6, [0057]).

21. The method of claim 11, wherein selecting the desired operating point comprises: correlating component performance information associated with at least two components in the system in order to derive correlated system performance information

(Page 17, [0204]); and selecting the desired operating point as the optimum performance point within the allowable range of operation according to the correlated system performance information (Page 2, [0020]).

22. The method of claim 21, wherein controlling the system according to the desired operating point comprises providing a setpoint to a controller associated with the system according to the desired operating point (Page 2, [0020]).

23. The method of claim 12, further comprising automatically ordering an asset via the Internet (Page 6, [0057]).

As for claims 24-27, the same citations applied to claims 17-20 above apply as well for these claims.

28. The method of claim 21, wherein the component performance information comprises at least one of life cycle cost information, efficiency information, life expectancy information, safety information, emissions information, operational cost information, MTBF information, noise information, and vibration information (Page 6, [0059]).

29. The method of claim 28, wherein the system comprises a motorized pump system for pumping fluid, having an electric motor operatively coupled with a pump, and a

Art Unit: 2123

motor drive providing electrical power to the motor, wherein the component performance information comprises efficiency information related to at least two of the motor, the pump, and the motor drive, and wherein the correlated system performance information comprises cost information related to the system operational cost per unit of fluid pumped (Page 18, [0208]).

30. The method of claim 10, wherein the system comprises a motorized pump system having an electric motor operatively coupled with a pump, and a motor drive providing electrical power to the motor, and wherein the performance characteristics associated with a plurality of components in the system comprises life expectancies of at least two of the motor, the pump, and the motor drive (Page 18, [0208]).

31. The method of claim 10, wherein the system comprises a motorized pump system having an electric motor operatively coupled with a pump, and a motor drive providing electrical power to the motor, and wherein the performance characteristics associated with a plurality of components in the system comprises cost of operation associated with at least two of the motor, the pump, and the motor drive (Page 18, [0208]).

32. The method of claim 10, wherein selecting the desired operating point comprises measuring at least one process variable from a sensor associated with the system (Page 6, [0058]-[0059]).

Art Unit: 2123

As for claim 33, the same citations applied to claim 10 above apply as well for this claim.

As for claims 34-35, the same citations applied to claim 1 above apply as well for these claims.

36. A computer readable medium storing the components of claim 1 (Fig. 24, element 119).

37. A computer readable medium having stored thereon computer executable instructions for performing the method of claim 10 (Fig. 24, element 119).

39. An industrial automation layout methodology, comprising: analyzing machine related diagnostic data (Fig. 24, element 101); analyzing business concern data (Fig. 24, PORPER REPLACEMENT BUDGET); analyzing business objective data(PROPER STOCK MANAGEMENT); and specifying machine acquisition based at least in part upon the analyses (Page 6, [0057]; Page 7, [0075]).

40. A computer-implemented method for ordering parts in an industrial automation environment, comprising: automatically receiving an analyzing data relating to a diagnosis of a machine (Fig. 24, element 101); automatically inferring a failure period for at least one part of the machine (Page 6, [0057]); and automatically ordering a

replacement for the at least one part prior to the inferred failure period (Page 6, [0057]).

41. The method of claim 40 further comprising employing an options based scheme in connection with machine management (Page 7, [0075]).

42. The method of claim 40 further comprising employing an options based scheme in connection with decision support (Page 20, [0239]).

43. The method of claim 40 further comprising employing an options based scheme in connection with asset optimization (page 20, [0239]).

44. A system that facilitates optimizing industrial business operations, comprising: a component that receives data relating to state of a subset of machines that are part of the industrial business operations (Fig. 24, element 101); and a diagnostics engine that diagnose at least a subset of the operations based in part on the received data, the diagnostics engine comprising a plurality of intelligent software agents that serve as proxies for at least the subset of machines, for modeling and representing interactions with one another, and for facilitating convergence on modification and control of the subset of machines (Page 2 [0013]; Page 5, [0051]-[0052]; Fig. 10).

45. The system of claim 44, the diagnostic engine infers future business conditions (Page 6, [0057]).

46. The system of claim 45, the future business conditions comprising at least one of future raw materials and future product demand (Page 6, [0057]).

47. A system that facilitates optimizing industrial business operations, comprising: a component that receives data relating to state of a that is part of the industrial business operations (Fig. 24, element 101); and a diagnostics engine that diagnose at least a subset of the operations based in part on the received data, the diagnostics engine comprising a plurality of intelligent software agents for modeling and representing interactions between the subset of machines, for efficiently optimizing industrial business operations (Page 2 [0013]; Page 5, [0051]-[0052]; Fig. 10).

Gotou discloses the limitations of claims 1-37 and 39-47 above, however, Gotou does not disclose a prognostic engine for analyzing data relating to prognoses of operational aspects of machines or that infers future state of operations of the machine. However, Bryant discloses a model-based machine diagnostics and prognostics system for diagnosing the operational health of a system and to forecast future health. Therefore, it would have been obvious to a person of the ordinary skill in the art at the time the invention was made to combine the system of Gotou with the diagnostics and prognostics system of Bryant because it would provide an improved system for forecasting the future operational health of a system ([0003]; Abstract; [0011]-[0012]).

Art Unit: 2123

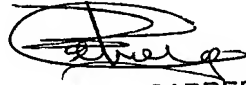
Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zoila E. Cabrera whose telephone number is 571-272-3738. The examiner can normally be reached on M-F from 8:00 a.m. to 5:30 p.m. EST (every other Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Z. E. C./
Primary Examiner, Art Unit 2123
2/19/08


ZOILA CABRERA
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100
2/19/08

/Zoila E. Cabrera/
Primary Examiner, Art Unit 2123